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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,653	04/02/2004	Shunpei Yamazaki	0756-7280	9676

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EXAMINER	
SEFER, AHMED N	
ART UNIT	PAPER NUMBER
2826	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/815,653	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	A. Sefer	2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 February 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-61 and 66-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-61 and 66-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/6/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed February 21, 2007 has been entered; no new claims have been introduced.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 39-61 and 66-69 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The application as originally filed does not specifically support the claim limitation "... an uneven surface". The specification describes PET substrates 301 and 302 each having an uneven surface, while independent claims 39-58 appear to indicate a single uneven surface between the pair of resinous/flexible substrates.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 39, 41, 43, 45, 60, 61 and 66-68, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai et al. ("Wakai") USPN 5,229,644 in view of Takenouchi et al. ("Takenouchi") USPN 5,627,404.

Wakai discloses in figs. 3-13 a display device comprising: a pair of substrates 101/116 facing each other; a thin film transistor 111 comprising a coplanar thin film transistor **(as in claim 66)** or an inverted-staggered thin film transistor **(as in claim 67)** formed over one of the pair of substrates, wherein the thin film transistor has a channel formation region 104 comprising amorphous silicon (as in claims 43 and 45); a layer 108 comprising a resinous material comprising acrylic resin (as in claim 60) (col. 4, line 65) or a silicon oxide 103 **(as in claims 41 and 45)** covering the thin film transistor; and a pixel electrode 110 formed over the layer, and electrically connected to the thin film transistor, wherein a resinous layer (the lower/upper portion of region 108) being provided on a surface of one of the pair of the substrates (as in claims 39, 41, 43 and 45), but does not specifically disclose resinous substrate having an uneven surface.

Takenouchi discloses (fig. 1 and cols. 3 and 4, lines 39-67 and 31-48 respectively) a device having a resinous substrate 10 comprising at least one selected from the group consisting of PEN, PES and polymide **(as in claim 68)** and having an uneven surface; and a resinous layer 11 formed on the resinous substrate, wherein the resinous layer planarizes the uneven surface

Therefore, in view of Takenouchi's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Wakai's device by incorporating resinous substrates. The motivation would be to provide substrates with a low cost and readily available material as compared to glass substrate as taught by Takenouchi.

Re claim 61, Takenouchi discloses (col. 3, lines 55-60) a resinous layer comprising methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

6. Claims 39, 41, 43, 45, 60, 61 and 66-68, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiki et al. ("Nishiki") JP 63-279228 in view of Takenouchi.

Nishiki discloses in figs. 1-6 a display device comprising: a pair of substrates 21/31 facing each other and having an uneven surface; a thin film transistor 15 comprising a coplanar thin film transistor (**as in claim 66**) or an inverted-staggered thin film transistor (**as in claim 67**) formed over one of the pair of filmy substrates, wherein the thin film transistor has a channel formation region 25 comprising amorphous silicon (**as in claims 43 and 45**); a layer 57 comprising a resinous material or a silicon oxide 23 (**as in claims 41 and 45**) covering the thin film transistor; and a pixel electrode 51 formed over the layer, and electrically connected to the thin film transistor, wherein a resinous layer (the lower/upper portion of region 57) being provided on a surface of one of the pair of resinous substrates (**as in claims 39, 41, 43 and 45**), but does not specifically disclose resinous substrate having an uneven surface.

Takenouchi discloses (fig. 1 and cols. 3 and 4, lines 39-67 and 31-48 respectively) a device having a resinous substrate 10 comprising at least one selected from the group consisting of PEN, PES and polymide (**as in claim 68**) and having an uneven surface; and a resinous layer 11 formed on the resinous substrate, wherein the resinous layer planarizes the uneven surface

Therefore, in view of Takenouchi's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Wakai's device by incorporating

resinous substrates. The motivation would be to provide a substrate with a low cost and readily available material as compared to glass substrate as taught by Takenouchi.

Re the recitation of claim 41 calling for " ...formed by applying a liquid", it refers to a process and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Re claim 61, Takenouchi discloses (col. 3, lines 55-60) a resinous layer comprising methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

7. Claims 40, 42, 44, 46, 60, 61, 66, 67 and 69, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai in view of Takenouchi.

Wakai discloses in figs. 3-13 a display device comprising: a pair of substrates 101/116 facing each other; a thin film transistor 111 comprising a coplanar thin film transistor (**as in claim 66**) or an inverted-staggered thin film transistor (**as in claim 67**), wherein the thin film transistor has a channel formation region 104 comprising amorphous silicon (as in claim 44) formed over one of the pair substrates; a layer 108 comprising a resinous material or a silicon oxide 103 (**as in claims 42 and 46**) covering the thin film transistor; and a pixel electrode 110 formed over the layer or silicon oxide (**as in claims 42 and 46**), and electrically connected to the thin film transistor, wherein a resinous layer (the lower/upper portion of region 108) comprising acrylic resin (**as in claim 60**) (col. 4, line 65) being provided on a surface of one of the pair of

substrates (as in claims 40, 42, 44 and 46), but does not specifically disclose flexible substrate having an uneven surface.

Takenouchi discloses (fig. 1 and cols. 3 and 4, lines 39-67 and 31-48 respectively) a device having a flexible substrate 10 comprising at least one selected from the group consisting of PEN, PES and polymide **(as in claim 69)** and having an uneven surface; and a resinous layer 11 formed on the flexible substrate, wherein the resinous layer planarizes the uneven surface.

Therefore, in view of Takenouchi's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Wakai's device by incorporating a flexible substrate. The motivation would be to provide substrates with a low cost and readily available material as compared to glass substrate as taught by Takenouchi.

Re the recitation of **claim 42** calling for " ...formed by applying a liquid" or "... planarizes the uneven surface", it refers to a process and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Re claim 61, Takenouchi discloses (col. 3, lines 55-60) a resinous layer comprising methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

8. Claims 47, 49, 51, 53, 55, 57, 59-61, 66-68, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai in view of Wakai et al. USPN 5,821,137 ("Wakai '137") and Takenouchi.

Wakai discloses in figs. 3-13 a display device comprising: a pair of resinous substrates 101/116 facing each other an uneven surface; a thin film transistor 111 comprising a coplanar thin film transistor (**as in claim 66**) or an inverted-staggered thin film transistor (**as in claim 67**) formed over one of the pair of substrates, wherein the thin film transistor has a channel formation region 104; a layer 108 comprising a resinous material comprising acrylic resin (**as in claim 60**) (col. 4, line 65) or a silicon oxide 103 (**as in claims 49, 53 and 57**) covering the thin film transistor; and a pixel electrode 110 formed over the layer or the silicon oxide (**as in claims 49, 53 and 57**), and electrically connected to the thin film transistor, wherein a resinous layer (the lower/upper portion of region 108) is provided on a surface of one of the pair of filmy substrates, but discloses neither microcrystalline silicon nor resinous substrate having an uneven surface.

Wakai '37 discloses utilizing a laser light comprising excimer laser light (as in claim 59) to form a channel formation region of a thin transistor comprising microcrystalline silicon.

Takenouchi discloses (fig. 1 and cols. 3 and 4, lines 39-67 and 31-48 respectively) a device having a resinous substrate 10 comprising at least one selected from the group consisting of PEN, PES and polymide (**as in claim 68**) and having an uneven surface; and a resinous layer 11 formed on the resinous substrate, wherein the resinous layer planarizes the uneven surface

Therefore, in view of Takenouchi's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Wakai's device by incorporating resinous substrates. The motivation would be to provide substrates with a low cost and readily available material as compared to glass substrate as taught by Takenouchi. It would have been obvious to incorporate a channel formation region comprising microcrystalline silicon since that would reduce leakage current as taught by Wakai '137

Re the recitation **claims 49, 53 and 57** calling for " ...formed by applying a liquid", it refers to a process and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Re claim 61, Takenouchi discloses (col. 3, lines 55-60) a resinous layer comprising methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

9. Claims 48, 50, 52, 54, 56, 58-61, 66, 67 and 69, as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai in view of Takenouchi and Wakai '137.

Wakai discloses in figs. 3-13 a display device comprising: a pair of substrates 101/116 facing each other; a thin film transistor 111 comprising a coplanar thin film transistor **(as in claim 66)** or an inverted-staggered thin film transistor **(as in claim 67)**, wherein the thin film transistor has a channel formation region 104 comprising amorphous silicon formed over one of the pair substrates; a layer 108 comprising a resinous material or a silicon oxide 103 (as in claims 50, 54 and 58) covering the thin film transistor; and a pixel electrode 110 formed over the layer or silicon oxide (as in claims 50, 54 and 58), and electrically connected to the thin film transistor, wherein a resinous layer (the lower/upper portion of region 108) comprising acrylic resin (as in claim 60) (col. 4, line 65) being provided on a surface of one of the pair of substrates (as in claims 40, 42, 44 and 46), but discloses neither microcrystalline silicon nor flexible substrate having an uneven surface

Takenouchi discloses (fig. 1 and cols. 3 and 4, lines 39-67 and 31-48 respectively) a device having a flexible substrate 10 comprising at least one selected from the group consisting of PEN, PES and polymide **(as in claim 69)** and having an uneven surface; and a resinous layer 11 formed on the flexible substrate, wherein the resinous layer planarizes the uneven surface.

Wakai '137 discloses utilizing a laser light comprising excimer laser light **(as in claim 59)** to form a channel formation region of a thin transistor comprising microcrystalline or crystalline **(as in claims 52, 54, 56 and 58)** silicon.

Therefore, in view of Takenouchi's teachings, one having an ordinary skill in the art at the time the invention was made would be motivated to modify Wakai's device by incorporating a flexible substrate. The motivation would be to provide substrates with a low cost and readily available material as compared to glass substrate as taught by Takenouchi. It would have been obvious to incorporate a channel formation region comprising microcrystalline/crystalline silicon since that would reduce leakage current as taught by Wakai '137.

Re the recitation claims **50, 54 and 58** calling for " ...formed by applying a liquid", it refers to a process and "product by process" claims are directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685 and In re Thorpe, 227 USPQ 964, 966. Further, note that the applicant has the burden of proof in such cases, as the above case law makes clear. Also see MPEP 2113.

Re claim 61, Takenouchi discloses (col. 3, lines 55-60) a resinous layer comprising methyl esters of acrylic acid, ethyl esters of acrylic acid, butyl esters of acrylic acid, and 2-ethylhexyl esters of acrylic acid.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Sefer whose telephone number is (571) 272-1921.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ANS
May 25, 2007

A. Sefer
Patent Examiner
Art Unit 2826